MICROPROCESSORS AND MICROSYSTEMS

Index to Volume 22 (1998–1999)

No 1 pp 1–60
No 2 pp 67–126
No 3–4 pp 131–215
No 5 pp 227–279
No 6 pp 291–343
No 7 pp 355–422
No 8 pp 423–500
No 9 pp 501–576
No 10 pp 577–618

Article index

Number 1

Implementation of MTD–WVD on a TMS320C30 DSP processor
J. Giridhar, K.M.M. Prabhu 1
Automatic fault localization at chip level
R.D.L. Stout, A.J. van de Goor, R.E. Wolff 13
A combinatorial architecture for instruction-level parallelism
E. Berkovich, S. Berkovich 23
U-cache: A cost-effective solution to the virtual cache synonym problem
J. Kim, S.L. Min, C.S. Kim 33
An OLE-based speech compression system for multimedia applications
T. Srikanthan, G. Wee Leng, S.K. Amarasinghe 41
A scalable register file architecture for superscalar processors
S. Wallace, N. Bagherzadeh 49

Number 2

Systems control for a micro-stereolithography prototype
S. Huang, M.I. Heywood, R.C.D. Young, M. Farsari, C.R. Chatwin 67
K-FLIX—a framework for custom-configurable embedded Kalman filter microcomputers
Z. Salcic, C.-R. Lee 79
Stereo output transputer interface board
T.P.W. Price, D.M. Howard, A.M. Tyrrell 87
New processing elements: Max and sum_max with applications
W.-K. Chou 103
Comparing different architectures for real-time computing of special algorithms: A case study
S. Aiello, A. Anzalone, M. Bartolucci, G. Cardella, S. Cavallaro, E. De Filippo, S. Feminò, M. Geraci, F. Giustolisi, P. Guazzoni, C.M. Iacono-Manno, G. Lanzalone, G. Lanzanò, S. Lo Nigro, G. Manfredi, A. Pagano, M. Papa, S. Pirrone, G. Politi, F. Porto, F. Rizzo, S. Sambataro, G. Sechi, M.L. Sperduto, C. Sutera, L. Zetta 111
Interrupt latency in systems based on Intel 80 × 86 processors
M.W.S. Macauley 121

Numbers 3 and 4

Editorial
A.M. Goscinski 131
Virtual signal processors
C. Dick, F. Harris 135
Determination of processor allocation in the design of processor arrays
D. Fimmel, R. Merker 149
Supporting high priority traffic in wormhole networks
A.-H. Smai, L.-E. Thorelli 157
Page-mapping techniques to reduce cache conflicts on CC-NUMA multiprocessors
Z. Li, J. Huang, G. Jin 165
Memory ushering in a scalable computing cluster
A. Barak, A. Braverman 175
The RHODOS DSM system
J. Silcock, A. Goscinski 183
Genetics-based multiprocessor scheduling using task duplication
T. Tsuchiya, T. Osada, T. Kikuno 197
A parallel sort-balance mutual range-join algorithm on hypercube computers
R. Wong, R. Topor, H. Shen 209

Number 5

THETIS: an underwater remotely operated vehicle for water pollution measurements
J.N. Lygouras, K.A. Lalakos, P.G. Tsalides 227
High performance VLSI modules for division and square root
G. Cappuccino, P. Corsonello, G. Cocorullo 239
Mechanisms for application-level recoverable-persistence in a single address space
A. Bartoli, G. Dini 247
A combined hardware/software approach for fast kinematic processing
C. Krieger, B. Hosticka, T. Krupp, M. Hiller, A. Kecskeméthy 263
Book review
L. Oellrich 277
Erratum
F. Kovaevi 279

Number 6

Special issue on instruction level parallelism (ILP)
D. Tabak 291
Data value speculation in superscalar processors
J. Gonzalez, A. Gonzalez 293
Techniques for performing highly accurate data value prediction
R. Sathe, K. Wang, M. Franklin 303
Improving achievable ILP through value prediction and program profiling
F. Gabbay, A. Mendelson 315
The PEWs microarchitecture: reducing complexity through data-dependence based decentralization
N. Ranganathan, M. Franklin 333

Number 7

Performance of the Hough transform on a distributed memory multiprocessor
A. Underhill, M. Atiquzzaman, J. Ophel 355
Effects of topology and buffering on a processor farm
P.K.K. Loh, W. Cai 363

Field programmable gate array-based PCI interface for a coprocessor system
K. Kuusilinna, T. Hämäläinen, J. Saarinen 373
Tool for the analysis and memory-trace generation of DOS executable files
G. Galeano Gil, J.A. Gómez Pulido, J.M. Sánchez Pérez 389
Design of an Internet fax and voice gateway
S. Foo, C.K. Yeo, S.C. Hui, D.H. Xue 395
Design of a bus-based shared-memory multiprocessor DICE
G. Lee, B.W. Quattlebaum, S. Cho, L.L. Kinney 403
A low-cost digital signal processor-based earmuff using adaptive active noise control
W.S. Gan, Y.K. Chong, M.J. Er 413

Number 8

Towards a scheduling and timing analysis solution for integrated modular avionic systems
A. Grigg, N.C. Audsley 423
Open systems Ada technology demonstration program
D.C. Winter 433
Emerging opportunities for applying COTS optoelectronics in avionics fiber-optic networks
M.W. Beranek, E.Y. Chan, H.E. Hager, Q.N. Lee, J.S. Wilgus 439
ATM for legacy aircraft avionics
M.J. Harris 453
Visor projected helmet mounted displays technology and applications
A.A. Cameron 465
Cosmic radiation effects on avionics
C.S. Dyer, P.R. Truscott 477
Digital signal processing (DSP) radios: trends, benefits and challenges
R.H. Sternowski 485
Ground zero zero: flying into the next millennium with embedded systems
R. Shaw 493

Number 9

An FPGA extension to ALU functions
V. Guštin 501
Message latency in the 2-dimensional mesh with wormhole routing
M. Ould-Khaoua 509
A checkpointing algorithm for an SCI based distributed shared memory system
S. Kalaiselvi, V. Rajaraman 515
Fuzzy logic speed control of an induction motor
J. Fonseca, J.L. Afonso, J.S. Martins, C. Couto 523
A functional-level testability measure for register-level circuits and its estimation
C.P. Ravikumar, G.S. Saund, N. Agrawal 535
RAPROS—A rapid prototyping system and run-time environment for PC-based hardware/software applications
Z. Salcic, M.S. Cheng 543
Design and implementation of a wheel speed measurement circuit using field programmable gate arrays in a spacecraft
F. Thomas, J.K. Kishore, K.M. Bharadwaj, M.M. Nayak, V.K. Agrawal 553
An adaptive write error detection technique in on-chip caches of multi-level caching systems
S. Kim, A.K. Somani 561
Book review
V. Dvorak 571
Erratum
J. Giridhar, K.M.M. Prabhu 573

Number 10

Guest editorial
S. Cheng, C. Junliang 577
ATM switching by divide-and-conquer interconnection of partial sorters
S.-Y.R. Li, W. Lam 579
A processor-sharing model for input-buffered ATM-switches in a correlated traffic environment
K. Laevens, 589
A predictive bandwidth management scheme and network architecture for real-time VBR traffic
X. Wang, J.S. Meditch 597
Broadcast digital subscriber lines using discrete multitone for broadband access
K.-P. Ho, 605
Analysis of multiple sources delayed releasing SVCC based data communications over ATM
H. Gung, L. Zhenming 611

Author Index

Afonso, J.L. 523
Agrawal, N. 535
Agrawal, V.K. 553
Aiello, S. 111
Amarasinghe, S.K. 41
Anzalone, A. 111
Atiquzzaman, M. 355
Audsley, N.C. 423

Bagherzadeh, N. 49
Barak, A. 175
Bartoli, A. 247
Bartolucci, M. 111
Beranek, M.W. 439
Berkovich, E. 23
Berkovich, S. 23
Bharadwaj, K.M. 553
Braverman, A. 175

Cai, W. 363
Cameron, A.A. 465
Cappuccino, G. 239
Cardella, G. 111
Cavallaro, S. 111
Chan, E.Y. 439
Chatwin, C.R. 67
Cheng, M.S. 543
Cho, S. 403
Chong, Y.K. 413
Chou, W.-K. 103
Cocorullo, G. 239
Corsonello, P. 239
Couto, C. 523

De Filippo, E. 111
Dick, C. 135
Dini, G. 247
Dvorak, V. 571
Dyer, C.S. 477

Er, M.J. 413

Farsari, M. 67
Feminò, S. 111
Fimmel, D. 149
Fonseca, J. 523
Foo, S. 395
Franklin, M. 303, 333

Gabbay, F. 315
Gan, W.S. 413
Geraci, M. 111
Gil, G.G. 389
Giridhar, J. 1, 573
Giustolisi, F. 111
Gonzalez, A. 293
Gonzalez, J. 293
Goscinski, A. 183
Gómez Pulido, J.A. 389
Grigg, A. 423
Guazzoni, P. 111
Gung, H. 611
Guštin, V. 501

Hager, H.E. 439
Harris, F. 135
Harris, M.J. 453
Hämäläinen, T. 373
Heywood, M.I. 67
Hiller, M. 263
Ho, K.-P. 605
Hosticka, B. 263
Howard, D.M. 87
Huang, J. 165
Huang, S. 67
Hui, S.C. 395

Iacono-Manno, C.M. 111

Jin, G. 165

Kalaiselvi, S. 515
Kecskeméthy, A. 263
Kikuno, T. 197
Kim, C.S. 33
Kim, J. 33
Kim, S. 561
Kinney, L.L. 403
Kishore, J.K. 553
Kovaevi, F. 279
Krieger, Ch. 263
Krupp, Th. 263
Kuusilinna, K. 373

Laevens, K. 589
Lalakos, K.A. 227
Lam, W. 579

Lanzalone, G. 111
Lanzanò, G. 111
Le, Q.N. 439
Lee, C.-R. 79
Lee, G. 403
Leng, G.W. 41
Li, S.-Y.R. 579
Li, Z. 165
Lo Nigro, S. 111
Loh, P.K.K. 363
Lygouras, J.N. 227

Macauley, M.W.S. 121
Manfredi, G. 111
Martins, J.S. 523
Meditch, J.S. 597
Mendelson, A. 315
Merker, R. 149
Min, S.L. 33

Nayak, M.M. 553

Oellrich, L. 227
Ophel, J. 355
Osada, T. 197
Ould-Khaoua, M. 509

Pagano, A. 111
Papa, M. 111
Pirrone, S. 111
Politi, G. 111
Porto, F. 111
Prabhu, K.M.M. 1, 573
Price, T.P.W. 87

Quattlebaum, B.W. 403

Rajaraman, V. 515
Ranganathan, N. 333
Ravikumar, C.P. 535
Rizzo, F. 111

Saarinen, J. 373
Salcic, Z. 79, 543
Sambataro, S. 111
Sathe, R. 303
Saund, G.S. 535
Sánchez Pérez, J.M. 389
Sechi, G. 111
Shaw, R. 493
Shen, H. 209
Silcock, J. 183
Smai, A.-H. 157
Somani, A.K. 561
Sperduto, M.L. 111
Srikanthan, T. 41
Sternowski, R.H. 485
Stout, R.D.L. 13
Sutera, C. 111

Tabak, D. 291
Thomas, F. 553
Thorelli, L.-K. 157
Topor, R. 209
Truscott, P.R. 477
Tsalides, Ph.G. 227
Tsuchiya, T. 197
Tyrrell, A.M. 87

Underhill, A. 355

van de Goor, A.J. 13

Wallace, S. 49
Wang, K. 303
Wang, X. 597
Wilgus, J.S. 439
Winter, D.C. 433
Wolff, R.E. 13
Wong, R. 209

Xue, D.H. 395

Yeo, C.K. 395
Young, R.C.D. 67

Zetta, L. 111
Zhenming, L. 611

Keyword Index

Adaptive active noise control
A low-cost digital signal processor-based earmuff using adaptive active noise control 413
Adaptive routing
Message latency in the 2-dimensional mesh with wormhole routing 509
Adaptive signal processing
A low-cost digital signal processor-based earmuff using adaptive active noise control 413
ADC
Digital signal processing (DSP) radios: trends, benefits and challenges 485
Air Force F-22
Emerging opportunities for applying COTS optoelectronics in avionics fiber-optic networks 439
Analog-to-digital converter
Digital signal processing (DSP) radios: trends, benefits and challenges 485
Application-level memory management
Mechanisms for application-level recoverable-persistence in a single address space 247
Architecture
Digital signal processing (DSP) radios: trends, benefits and challenges 485
High performance VLSI modules for division and square root 239
Arithmetic-logic unit
An FPGA extension to ALU functions 501
Asymmetric digital subscriber lines
Broadcast digital subscriber lines using discrete multitone for broadband access 605
ATM traffic control device
A predictive bandwidth management scheme and network architecture for real-time VBR traffic 597
ATM
Analysis of multiple sources delayed releasing SVCC based data communications over ATM 611
ATM for legacy aircraft avionics 453
ATM-switches
A processor-sharing model for input-buffered ATM-switches in a correlated traffic environment 589
Automatic design
Determination of processor allocation in the design of processor arrays 149
Avionics networks
Emerging opportunities for applying COTS optoelectronics in avionics fiber-optic networks 439
Ballistic
Open systems Ada technology demonstration program 433
Boeing 777
Emerging opportunities for applying COTS optoelectronics in avionics fiber-optic networks 439
Broadband access
Broadcast digital subscriber lines using discrete multitone for broadband access 605
Broadcast digital subscriber lines
Broadcast digital subscriber lines using discrete multitone for broadband access 605
Buffer requirements
Effects of topology and buffering on a processor farm 363

Cache write sure technique
An adaptive write error detection technique in on-chip caches of multi-level caching systems 561
Cache-only memory architecture
Design of a bus-based shared-memory multiprocessor DICE 403
CC-NUMA multiprocessor
Page-mapping techniques to reduce cache conflicts on CC-NUMA multiprocessors 165
Checkpointing
A checkpointing algorithm for an SCI based distributed shared memory system 515
Chip level automatic test
Automatic fault localization at chip level 13
Chip-on-board
Emerging opportunities for applying COTS optoelectronics in avionics fiber-optic networks 439
Coherence protocol
Design of a bus-based shared-memory multiprocessor DICE 403
Combinatorial block designs
A combinatorial architecture for instruction-level parallelism 23
Communication delay
Genetics-based multiprocessor scheduling using task duplication 197
Computer architecture
A combinatorial architecture for instruction-level parallelism 23
Computer controlled systems
THETIS: an underwater remotely operated vehicle for water pollution measurements 227
Computer root
High performance VLSI modules for division and square root 239
Computing devices
Comparing different architectures for real-time computing of special algorithms: A case study 111
Concentration network
ATM switching by divide-and-conquer interconnection of partial sorters 579
Consistency
The RHODOS DSM system 183
Coordination Rotation in Digital Computer (CORDIC) processor
A combined hardware/software approach for fast kinematic processing 263

Cosmic rays
Cosmic radiation effects on avionics 477
CTMAXNET
New processing elements: Max and sum_max with applications 103
Customizable microcomputer
K-FLIX—a framework for custom-configurable embedded Kalman filter microcomputers 79

Data handling
Comparing different architectures for real-time computing of special algorithms: A case study 111
Data speculation
Data value speculation in superscalar processors 293
Data-task affinity
Page-mapping techniques to reduce cache conflicts on CC-NUMA multiprocessors 165
Decentralization
The PEWs microarchitecture: reducing complexity through data-dependence based decentralization 333
DFIP algorithm
Open systems Ada technology demonstration program 433
Diagnostic test
Automatic fault localization at chip level 13
Digital signal processing
Digital signal processing (DSP) radios: trends, benefits and challenges 485
Digital signal processor (DSP)
A low-cost digital signal processor-based earmuff using adaptive active noise control 413
Diode lasers
Emerging opportunities for applying COTS optoelectronics in avionics fiber-optic networks 439
Distributed memory machine
Performance of the Hough transform on a distributed memory multiprocessor 355
Distributed Operating System
The RHODOS DSM system 183
Distributed system
Towards a scheduling and timing analysis solution for integrated modular avionic systems 423
DRAM
Cosmic radiation effects on avionics 477
DSM
The RHODOS DSM system 183
DSP processors
Implementation of MTD–WVD on a TMS320C30 DSP processor 1
DSP
Digital signal processing (DSP) radios: trends, benefits and challenges 485
Dynamic range
Digital signal processing (DSP) radios: trends, benefits and challenges 485
Dynamic scheduling
The PEWs microarchitecture: reducing complexity through data-dependence based decentralization 333

Embedded systems
Ground zero zero: flying into the next millennium with embedded systems 493
Executable file debugger
Tool for the analysis and memory-trace generation of DOS executable files 389
Fast Fourier transform
Implementation of MTD–WVD on a TMS320C30 DSP processor 1
Fault tolerant cache
An adaptive write error detection technique in on-chip caches of multi-level caching systems 561
Fault tolerant computing
A checkpointing algorithm for an SCI based distributed shared memory system 515
Fax communication
Design of an Internet fax and voice gateway 395
FFT
Virtual signal processors 135
Fiber-optic networks
Emerging opportunities for applying COTS optoelectronics in avionics fiber-optic networks 439
Field programmable gate array
An FPGA extension to ALU functions 501
Field programmable gate array-based PCI interface for a coprocessor system 373
Flow control
Supporting high priority traffic in wormhole networks 157
FPGA
Virtual signal processors 135
Design and implementation of a wheel speed measurement circuit using field programmable gate arrays in a spacecraft 553
FPLD
K-FLIX—a framework for custom-configurable embedded Kalman filter microcomputers 79
RAPROS—A rapid prototyping system and run-time environment for PC-based hardware/software applications 543
Functional test
Automatic fault localization at chip level 13
Fuzzy logic
Fuzzy logic speed control of an induction motor 523

Genetic algorithm
Genetics-based multiprocessor scheduling using task duplication 197

Hardware description languages
An FPGA extension to ALU functions 501
Hardware window
The PEWs microarchitecture: reducing complexity through data-dependence based decentralization 333
Hardware/software co-solutions
RAPROS—A rapid prototyping system and run-time environment for PC-based hardware/software applications 543
Helmet mounted display
Visor projected helmet mounted displays technology and applications 465
Helmet mounted sight
Visor projected helmet mounted displays technology and applications 465
Helmet tracker
Visor projected helmet mounted displays technology and applications 465
Hidden Markov models (HMMs)
New processing elements: Max and sum_max with applications 103
Hough transform
Performance of the Hough transform on a distributed memory multiprocessor 355
Hybrid predictor
Techniques for performing highly accurate data value prediction 303
Hypercube
A parallel sort-balance mutual range-join algorithm on hypercube computers 209

IMA
Towards a scheduling and timing analysis solution for integrated modular avionic systems 423
Induction motor
Fuzzy logic speed control of an induction motor 523
Instruction-level parallelism (ILP)
Techniques for performing highly accurate data value prediction 303
The PEWs microarchitecture: reducing complexity through data-dependence based decentralization 333
Instruction-level parallelism
A combinatorial architecture for instruction-level parallelism 23
Data value speculation in superscalar processors 293
Improving achievable ILP through value prediction and program profiling 315
Interface
Stereo output transputer interface board 87
Internet telephony gateway
Design of an Internet fax and voice gateway 395
Internet
Design of an Internet fax and voice gateway 395
Interrupt
Interrupt latency in systems based on Intel 80 × 86 processors 121

***k*-sorting**
ATM switching by divide-and-conquer interconnection of partial sorters 579
Kalman filter
K-FLIX—a framework for custom-configurable embedded Kalman filter microcomputers 79
Kinematic computations
A combined hardware/software approach for fast kinematic processing 263

Latency reduction
Supporting high priority traffic in wormhole networks 157
Legacy aircraft
ATM for legacy aircraft avionics 453
Level circuits
A functional-level testability measure for register-level circuits and its estimation 535

Massively parallel architectures
Determination of processor allocation in the design of processor arrays 149

Memory replacement
Design of a bus-based shared-memory multiprocessor DICE 403
Memory sharing
Memory ushering in a scalable computing cluster 175
Memory-trace generation
Tool for the analysis and memory-trace generation of DOS executable files 389
Message latency
Message latency in the 2-dimensional mesh with wormhole routing 509
Micro-stereolithography
Systems control for a micro-stereolithography prototype 67
Microdosimetry
Cosmic radiation effects on avionics 477
Microprocessor
Interrupt latency in systems based on Intel 80 × 86 processors 121
MIR
Cosmic radiation effects on avionics 477
Module-external lines
A functional-level testability measure for register-level circuits and its estimation 535
Moving target detection
Implementation of MTD–WVD on a TMS320C30 DSP processor 1
Multi-priority queuing
Analysis of multiple sources delayed releasing SVCC based data communications over ATM 611
Multi-stage interconnection
ATM switching by divide-and-conquer interconnection of partial sorters 579
Multibody systems
A combined hardware/software approach for fast kinematic processing 263
Multicomputer operating system
Memory ushering in a scalable computing cluster 175
Multicomputers networks
Message latency in the 2-dimensional mesh with wormhole routing 509
Multimedia application
An OLE-based speech compression system for multimedia applications 41
Multimedia communication
A predictive bandwidth management scheme and network architecture for real-time VBR traffic
Multiprocessor networks
Supporting high priority traffic in wormhole networks 157
Multiprocessor
Genetics-based multiprocessor scheduling using task duplication 197

Network topology
Effects of topology and buffering on a processor farm 363
Neural networks
New processing elements: Max and sum_max with applications 103
Neurons (or processing elements)
New processing elements: Max and sum_max with applications 103
Night vision
Visor projected helmet mounted displays technology and applications 465

Object linking and embedding
An OLE-based speech compression system for multimedia applications 41
Optoelectronics
Emerging opportunities for applying COTS optoelectronics in avionics fiber-optic networks 439
OSAT program
Open systems Ada technology demonstration program 433

Page alignment
U-cache: A cost-effective solution to the virtual cache synonym problem 33
Page mapping
Page-mapping techniques to reduce cache conflicts on CC-NUMA multiprocessors 165
Parallel algorithm
A parallel sort-balance mutual range-join algorithm on hypercube computers 209
Parallel architectures
Message latency in the 2-dimensional mesh with wormhole routing 509
Parallel computing architectures
Virtual signal processors 135
Partial sorter
ATM switching by divide-and-conquer interconnection of partial sorters 579
PCI
Field programmable gate array-based PCI interface for a coprocessor system 373
Pentium and 80 × 86 microprocessors
Tool for the analysis and memory-trace generation of DOS executable files 389
Performance evaluation
Performance of the Hough transform on a distributed memory multiprocessor 355
Performance modelling
Message latency in the 2-dimensional mesh with wormhole routing 509
Performance
The RHODOS DSM system 183
Polynomial transform
Virtual signal processors 135
Position control
THETIS: an underwater remotely operated vehicle for water pollution measurements 227
Power-on test
Automatic fault localization at chip level 13
Prioritized traffic
Supporting high priority traffic in wormhole networks 157
Private cache
Page-mapping techniques to reduce cache conflicts on CC-NUMA multiprocessors 165
Processor arrays
A combined hardware/software approach for fast kinematic processing 263
Processor farm
Effects of topology and buffering on a processor farm 363
Processor-sharing
A processor-sharing model for input-buffered ATM-switches in a correlated traffic environment 589
Program profiling
Improving achievable ILP through value prediction and program profiling 315

Query evaluation
A parallel sort-balance mutual range-join algorithm on hypercube computers 209

Radiation effects
Cosmic radiation effects on avionics 477
Range-join
A parallel sort-balance mutual range-join algorithm on hypercube computers 209
Rapid applications development
Systems control for a micro-stereolithography prototype 67
Rapid prototyping
RAPROS—A rapid prototyping system and run-time environment for PC-based hardware/software applications 543
Systems control for a micro-stereolithography prototype 67
Real-time control
Fuzzy logic speed control of an induction motor 523
Real-time processing
Comparing different architectures for real-time computing of special algorithms: A case study 111
Real-time
Interrupt latency in systems based on Intel 80 × 86 processors 121
Towards a scheduling and timing analysis solution for integrated modular avionic systems 423
Reconfigurable computing
Virtual signal processors 135
Reconfiguration
An FPGA extension to ALU functions 501
Recoverable-persistence
Mechanisms for application-level recoverable-persistence in a single address space 247
Register file
A scalable register file architecture for superscalar processors 49
Register renaming
A scalable register file architecture for superscalar processors 49
Relational database
A parallel sort-balance mutual range-join algorithm on hypercube computers 209
Reliability with hermeticity
Emerging opportunities for applying COTS optoelectronics in avionics fiber-optic networks 439
Remotely operated vehicles (ROVs)
THETIS: an underwater remotely operated vehicle for water pollution measurements 227
Resource constrained processor allocation
Determination of processor allocation in the design of processor arrays 149
Resource management
Memory ushering in a scalable computing cluster 175
Risk management
Ground zero zero: flying into the next millennium with embedded systems 493
Rollback recovery
A checkpointing algorithm for an SCI based distributed shared memory system 515
Round-robin
A processor-sharing model for input-buffered ATM-switches in a correlated traffic environment 589

Scalable computing cluster
Memory ushering in a scalable computing cluster 175
SCI standard
A checkpointing algorithm for an SCI based distributed shared memory system 515
Secondary particles
Cosmic radiation effects on avionics 477
Self-route switching fabric
ATM switching by divide-and-conquer interconnection of partial sorters 579
Sensitization count
A functional-level testability measure for register-level circuits and its estimation 535
Shared bus
Design of a bus-based shared-memory multiprocessor DICE 403
Silicon optical bench
Emerging opportunities for applying COTS optoelectronics in avionics fiber-optic networks 439
Single address space
Mechanisms for application-level recoverable-persistence in a single address space 247
Slip control
Fuzzy logic speed control of an induction motor 523
Software radio
Digital signal processing (DSP) radios: trends, benefits and challenges 485
Software systems control
Systems control for a micro-stereolithography prototype 67
SONET protocol
ATM for legacy aircraft avionics 453
Spacecraft
Cosmic radiation effects on avionics 477
Speculative execution
Data value speculation in superscalar processors 293
Techniques for performing highly accurate data value prediction 303
The PEWs microarchitecture: reducing complexity through data-dependence based decentralization 333
Speech compression
An OLE-based speech compression system for multimedia applications 41
Speed measurement
Design and implementation of a wheel speed measurement circuit using field programmable gate arrays in a spacecraft 553
Standards
Digital signal processing (DSP) radios: trends, benefits and challenges 485
Stereo output
Stereo output transputer interface board 87
Stuck-at-faults
A functional-level testability measure for register-level circuits and its estimation 535
Subscriber lines
Broadcast digital subscriber lines using discrete multitone for broadband access 605
Superscalar microprocessors
A combinatorial architecture for instruction-level parallelism 23
Superscalar processors
Data value speculation in superscalar processors 293
Superscalar
A scalable register file architecture for superscalar processors 49
Switched VCC (SVCC)
Analysis of multiple sources delayed releasing SVCC based data communications over ATM 611
Synonym problem
U-cache: A cost-effective solution to the virtual cache synonym problem 33
Synthesis
Field programmable gate array-based PCI interface for a coprocessor system 373

Task duplication
Genetics-based multiprocessor scheduling using task duplication 197
Task scheduling
Genetics-based multiprocessor scheduling using task duplication 197
Telephony system
Design of an Internet fax and voice gateway 395
Testability measures
A functional-level testability measure for register-level circuits and its estimation 535
Timing analysis
Towards a scheduling and timing analysis solution for integrated modular avionic systems 423
Transient error detection
An adaptive write error detection technique in on-chip caches of multi-level caching systems 561
Transputer parallel processor
Stereo output transputer interface board 87
Two-level predictor
Techniques for performing highly accurate data value prediction 303

Underwater technology
THETIS: an underwater remotely operated vehicle for water pollution measurements 227

Value prediction
Data value speculation in superscalar processors 293
Improving achievable ILP through value prediction and program profiling 315
VHDL
Field programmable gate array-based PCI interface for a coprocessor system 373
Virtual cache
U-cache: A cost-effective solution to the virtual cache synonym problem 33
Visor projected
Visor projected helmet mounted displays technology and applications 465
Viterbi algorithms
New processing elements: Max and sum_max with applications 103
Voice communication
Design of an Internet fax and voice gateway 395

Water pollution measurement
THETIS: an underwater remotely operated vehicle for water pollution measurements 227
Weighted summation
New processing elements: Max and sum_max with applications 103
Wigner–Ville distribution
Implementation of MTD–WVD on a TMS320C30 DSP processor 1
Wormhole routing
Supporting high priority traffic in wormhole networks 157
Write-invalidate
The RHODOS DSM system 183
Write-update
The RHODOS DSM system 183

Year 2000 compliance
Ground zero zero: flying into the next millennium with embedded systems 493